

REMARKS

Claims 13-19 and 47-51 are pending. Claims 1-12 and 20-46 are cancelled. Support for the amendments to claims 13, 47 and 49 may be found in the specification as originally filed, for example, on page 23, line 36 to page 24, line 7. Support for new claims 50 and 51 may be found in the specification as originally filed, for example, on page 24, line 29-page 25, and line 24.

I. The Art Rejections

Claims 13, 16, 47 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by McMillan et al. (US 5,759,923).

Claim 48 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over McMillan as above in view of Hara et al. (US 2001/0030122).

Claim 49 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over McMillan as above in view of Hasegawa et al. (US 6,717,218).

Claims 13, 15-17, 19 and 47 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Matsuo et al (US 6,504,227) in view of Renn (US 2003/0048314).

Claims 14 and 18 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Matsuo et al and Renn and further in view of Boeck et al. (US 5,880,018).

Claim 48 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Matsuo et al and Renn and further in view of Hara et al.

Applicants respectfully submit that the present invention is not anticipated by or obvious over the disclosures of McMillan et al and Matsuo et al, alone or in view of the secondary

references, and request that the Examiner reconsider and withdraw these rejections in view of the following remarks.

As set forth in amended claim 1, the present invention uses an aerosol deposition process for forming any of the dielectric film, resistance film, or conductor film, wherein dry aerosol of a fine solid particle material is sprayed together with the carrier gas. See Applicants' specification, for example, page 23, line 36 – page 24, line 7. With the aerosol deposition technology of the present invention, the aerosol is formed already in the container 26, which forms a part of the aerosol generator 21, by supplying a carrier gas and further applying vibration to the particles filled in the container 26, in the form of dry aerosol of solid particles. No liquid solvent is used with the present invention.

In the case of McMillan et al, on the other hand, the aerosol is formed when the particles are ejected from the nozzle together with the solvent in the form of wet aerosol, which contains the mist of the solvent. Likewise for the aerosol of Matsuo et al, which use a mist of insulating fluid.

Further, the mechanism of solidification of the sprayed particles is different between the aerosol deposition technology of the present invention and the spray technology of McMillan et al and Matsuo et al.

As explained with reference to Applicants' FIG. 3, the particles ejected from the nozzle undergo impact activation upon collision with the substrate and there is formed a dense dielectric film on the substrate in which individual particles are connected with each other as a result of plastic deformation, which takes place without heating.

Contrary to the present invention, the technology of McMillan et al and Matsuo et al merely sprays particles with solvent, and thus, there occurs a deposition of the particles on the substrate in the form immersed in a film of the solvent. Thus, with the technology of McMillan and Matsuo et al, it is necessary to conduct a baking process to remove the solvent after the deposition, and the film thus formed has quality entirely different from the dense film attained with present invention as shown in FIG. 3. See Applicants' specification, page 10, lines 16-20, page 11, lines 20-36, page 13, line 22-page 14, line 8.

In the present invention, by spraying such fine particle material in the form of aerosol, it becomes possible to form an interlayer insulation film without degrading the characteristics of the fine particle material, and the dielectric loss of the interlayer insulation film at high frequency is reduced. Thereby, the loss in the high frequency region is reduced further and it becomes possible to realize a circuit substrate suitable for the high frequency circuit.

The secondary references, Hara et al, Hasegawa et al, Renn and Boeck et al do not overcome the deficiencies in the primary references McMillan et al and Matsuo et al discussed above. Therefore, even if the cited references are combined, it is respectfully submitted that the present invention would not have been selected and would not have been obvious to one of ordinary skill in the art.

For the above reasons, it is respectfully submitted that the subject matter of claims 13-19 and 47-51 is neither taught by nor made obvious from the disclosures of McMillan et al and Matsuo et al, alone or in view of the secondary references, and it is requested that the rejections under 35 U.S.C. §103(a) be reconsidered and withdrawn.

Amendment Under 37 C.F.R. §1.111
Application No. 10/820,114
Attorney Docket No. 042307

II. Conclusion

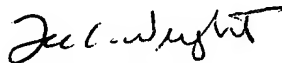
In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the rejections under 35 U.S.C. §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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